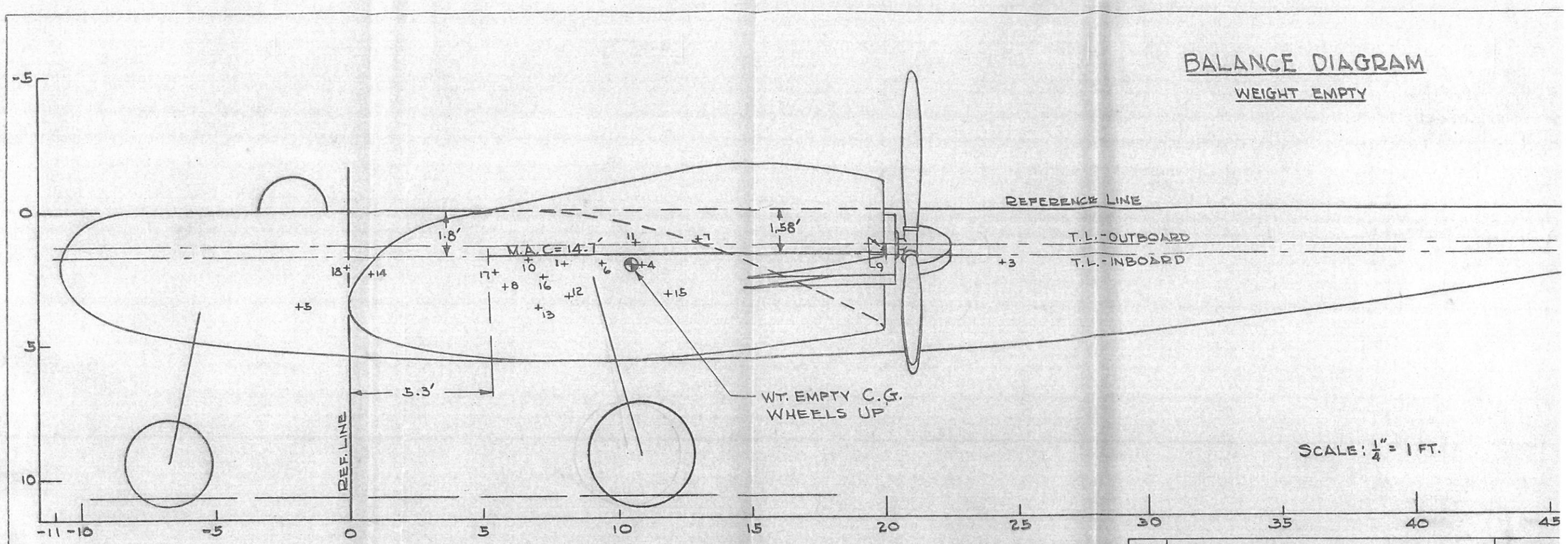
BALANCE DIAGRAM

WEIGHT EMPTY



HORIZONTAL C.G.

REFERENCE LINE = L.E.W. (ROOT SECTION)
M.A.C. = 14.7 FT.
L.E. M.A.C. AFT OF REFERENCE LINE = 5.3 FT.

$$C.G. = \frac{10.49 - 5.3}{14.7} = \frac{5.19}{14.7} = 35.3\% \text{ M.A.C.}$$

VERTICAL C.G.

REFERENCE LINE = TOP LINE OF FUSELAGE
BELOW REFERENCE LINE = 2.0 FT.
M.A.C. BELOW REFERENCE LINE = 1.58 FT.
C.G. BELOW M.A.C. = 2.0 − 1.58 = 0.42 FT.

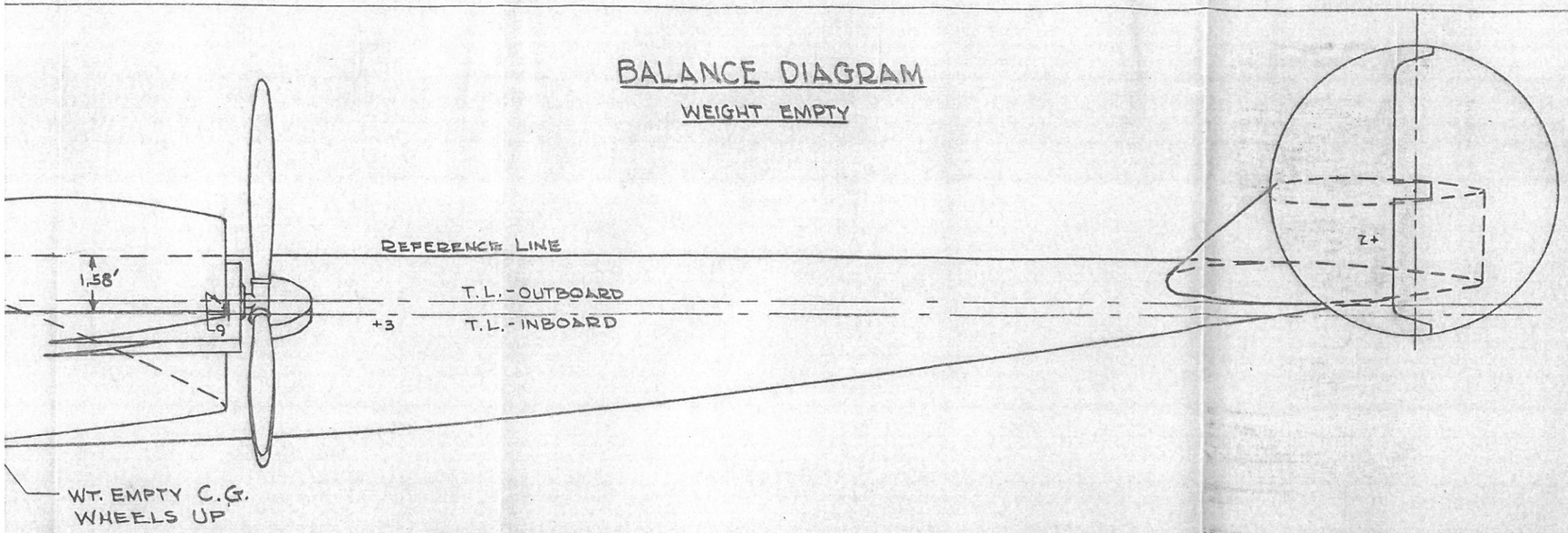
$$\text{C.G. IN \% M.A.C.} = \frac{.42}{14.7} = 2.9\% \text{ M.A.C.}$$

NO.	ITEM	WEIGHT POUNDS
1	WING GROUP (INCL. NOSE CABIN)	10340
2	TAIL GROUP	650
3	FUSELAGE (INCL. 4 GUN TURRETS)	1340
4*	LANDING GEAR-MAIN-UP	3490
5*	LANDING GEAR-NOSE-UP	1460
6*	ENGINES (4 - 1000 H.P. ALLISONS)	5065
7*	ENGINE ACCESSORIES	1530
8*	ENGINE CONTROLS	185
9*	PROPELLERS, GOVERNORS, & SUPPTS. SHAFTS	2200
10*	STARTING SYSTEM	225
11*	COOLING SYSTEM	1480
12*	OIL SYSTEM	80
13*	FUEL SYSTEM	180
14*	INSTRUMENTS	340
15*	SURFACE CONTROLS	320
16*	FURNISHINGS	1700
17*	ELECTRICAL SYSTEM	1045
18	RADIO	610
	WEIGHT EMPTY	32240

* FOR DETAIL BREAKDOWN, SEE PAGES 9-13

BALANCE DIAGRAM

WEIGHT EMPTY



SCALE: $\frac{1}{4}$" = 1 FT.

15 20 25 30 35 40 45 50 55 60

35.3% M.A.C.

NO.	ITEM	WEIGHT POUNDS	HORIZONTAL ARM	HORIZONTAL MOMENT	VERTICAL ARM	VERTICAL MOMENT
1	WING GROUP (INCL. NOSE CABIN)	10340	8.0	82720	2.0	20680
2	TAIL GROUP	650	53.5	34775	-.5	-325
3	FUSELAGE (INCL. 4 GUN TURRETS)	1340	24.3	32562	2.0	2680
4*	LANDING GEAR-MAIN-UP	3490	10.83	37803	2.03	7089
5*	LANDING GEAR-NOSE-UP	1460	-1.90	-2767	3.53	5160
6*	ENGINES (4 - 1000 H.P. ALLISONS)	5065	9.35	47358	1.95	9877
7*	ENGINE ACCESSORIES	1530	12.89	19715	1.09	1674
8*	ENGINE CONTROLS	185	5.83	1078	2.8	519
9*	PROPELLERS, GOVERNORS, & SUPPTS. SHAFTS	2200	19.96	43916	2.0	4400
10*	STARTING SYSTEM	225	6.7	1508	1.8	405
11*	COOLING SYSTEM	1480	10.58	15658	1.20	1773
12*	OIL SYSTEM	80	8.13	650	3.21	257
13*	FUEL SYSTEM	180	7.01	1262	3.59	647
14*	INSTRUMENTS	340	.80	273	2.28	776
15*	SURFACE CONTROLS	320	11.82	3783	3.06	980
16*	FURNISHINGS	1700	7.19	12230	2.47	4194
17*	ELECTRICAL SYSTEM	1045	5.48	5723	2.21	2312
18	RADIO	610	-.1	-61	2.1	1281
	WEIGHT EMPTY	32240	10.49	338186	2.00	64379

* FOR DETAIL BREAKDOWN, SEE PAGES 9-13